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DIRECTORATE OF
INTELLIGENCE

Industrial Facilities
(Non-Military)

Basic Imagery Interpretation Report

Tu-shan-tzu Petroleum Refinery and Storage

Tu-shan-tzu, China

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Top Secret

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DATE DECEMBER 1970
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CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
Imagery Analysis Service

RCS - 13/0001/71

INSTALLATION OR ACTIVITY NAME	COUNTRY
Tu-shan-tz Petroleum Refinery and Storage	CH

UTM COORDINATES	GEOGRAPHIC COORDINATES
45TUK278105	44-19-21N 084-50-57E

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MAP REFERENCE
2nd RTS. USATC, Series 200, Sheet M0243-22HL, 2nd edition, November 1969,
Scale 1:200 000 (SECRET

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LATEST IMAGERY USED	NEGATION DATE (If required)
	NA

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ABSTRACT

Tu-shan-tzu Petroleum Refinery is the larger of two refineries located in the Dzungarian Basin of northwestern China. The other is Ko-la-ma-i Petroleum Refinery

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The major refining facilities at Tu-shan-tzu include primary distillation, thermal cracking, light-ends recovery, coking, and lubricating oil production units. The products of the refinery include straight-run and cracked gasolines, kerosene, diesel and fuel oils, lubricating oils, waxes, asphaltic materials, and coke.

The refinery was in operation when it was first seen on good-quality photography in June 1964 and on all subsequent coverage. Construction has been observed on all coverage. This has mainly served to increase the primary distillation capability of the refinery. The only secondary processing unit constructed since October 1965 has been a delayed coking unit built between May 1966 and August 1968.

This report includes a photograph and a detailed line drawing of the refinery, a chronological summary of construction and operational status, and a tabular listing of facilities and equipment, including dimensions of storage tanks.

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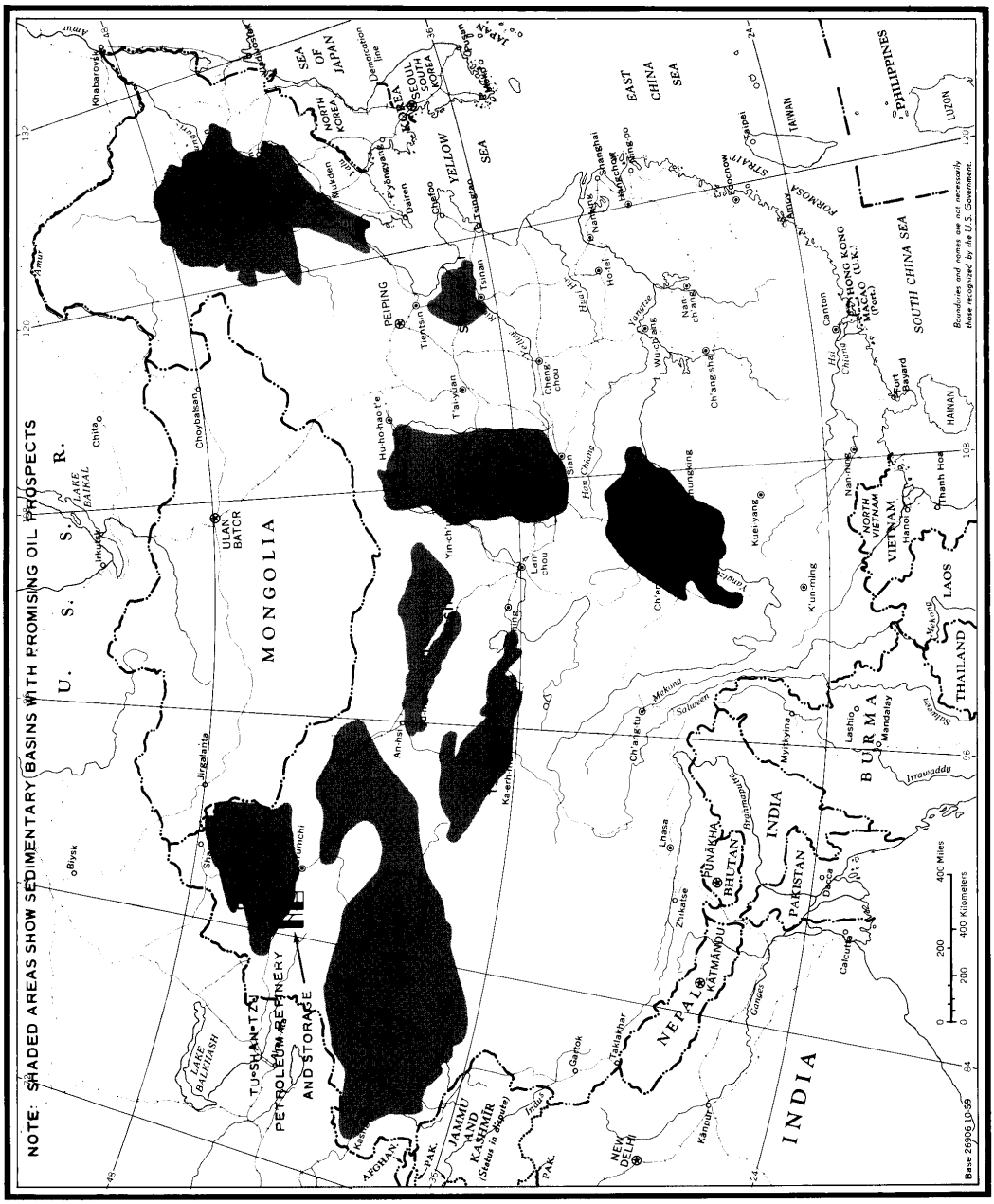

FIGURE 1. LOCATION MAP.

INTRODUCTION

Tu-shan-tzu Petroleum Refinery and Storage is located on the western edge of Tu-shan-tzu in the Dzungarian Basin, Singkiang Uighur Autonomous Region. In 1938 China and the USSR jointly began drilling for oil in this area, and by 1940 a refinery was completed. In 1943 the Soviet technicians withdrew, taking with them much of the refinery and oil field equipment. 1/ The present refinery reportedly was started in 1950 as a joint Chinese-Soviet project at the site of the abandoned refinery. 2/

Crude oil for charging the refinery comes from a small oil field located immediately southeast of Tu-shan-tzu and by two pipelines from the Ko-la-ma-i oil field about 100 nm to the north. Products and crude oil in excess of that used locally are transported by truck to the nearest rail facilities at Wu-lu-mu-chi (Urumchi), about 150 nm to the east-southeast. 3/

BASIC DESCRIPTION

Physical Features

The refinery occupies a rectangular area of about 240 acres which measures approximately 5,300 by 2,000 feet. It is secured by a wall, with controlled-access entrances. The plant has no rail facilities but is served by good all-weather roads.

Operational Functions

The major refining units presently in operation at this plant include crude oil purification and distillation units, coking units, a thermal cracking unit, a light-ends recovery unit, and lubricating oil production units.

Based on the identification of processing units, the products of the refinery include straight-run and cracked gasolines, kerosene, diesel and fuel oils, lubricating oils, waxes, asphaltic materials, and coke.

Construction and Operational Status

The refinery was in operation when it was first covered on good-quality photography in June 1964. At that time, the refinery contained shell stills, the thermal cracking unit, the light-ends recovery unit, the crude oil purification unit, the probable blending and treating unit, an unidentified secondary processing unit, most of the crude oil and products storage facilities, loading racks, and a power plant. An unidentified processing unit was present in Area M. It was later dismantled. A primary distillation unit in Area L appeared to contain only a vacuum distillation column. It probably received feedstock from the large shell still in Area H. In the lubricating oil plant, a probable solvent extraction unit and a probable dewaxing unit were in the early-to-mid stages of construction, while the clay treatment unit was not yet started.

By October 1965 all units in the lubricating oil plant appeared complete and operational. On photography of May 1966, site preparation for a delayed coking unit was seen. Several small storage tanks had been added near the lubricating oil plant.

By February 1968, the delayed coking unit appeared to be nearing completion but was not yet operating as indicated by the lack of coke in the pit adjacent to the two coking drums. A DeFlorez furnace and an atmospheric distillation column had been added to the vacuum distillation unit in Area L. The unidentified processing unit in Area M was being dismantled in preparation for the construction of a primary distillation unit.

Photography of August 1968 revealed that the delayed coking unit was complete and in operation. By November 1968 the treating/desalting section of the primary distillation unit in Area M and an unidentified facility in Area G were in early stages of construction.

In August 1969, the primary distillation unit in Area M was in the late stages of construction. Four of the five columns and the large pipe furnace were present. Seven treating/desalting drums were present but not roof covered.

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By May 1970, the primary distillation unit in Area M was nearly complete but did not appear to be operational as no pipe connections were observed between the pipe furnace and the processing columns, and no smoke or steam was seen. Construction on the unidentified facility in Area G had progressed very little.

Facilities and Equipment

The following table lists the functional areas and equipment within the refinery. All measurements are rounded to the nearest 5 feet.

Table 1. Equipment and Facilities at the Tu-shan-tzu Petroleum Refinery and Storage (Keyed to Figure 3)

Area	Functional Description	Equipment
A	Loading, Storage and Support	1 Cooling tower 3 Loading racks 62 Support buildings (one u/c) 1 Water reservoir 17 Cylindrical storage tanks 1 80-foot-diameter 1 50-foot-diameter 1 35-foot-diameter 8 25-foot-diameter 6 20-foot-diameter
B	Lubricating Oil Plant	
	(1) Clay Treatment	1 Unit with 7 Treating towers 2 Mixing tanks 1 Pipe furnace 1 Filter building 1 Support building 3 Support buildings 35 Cylindrical storage tanks 2 40-foot-diameter 18 25-foot-diameter 15 20-foot-diameter
	(2) Probable Solvent Extraction	1 Unit with 4 Processing columns 2 Probable solvent storage tanks 1 Bank of heat exchangers/cooling coils/accumulators 2 Pipe furnaces 1 Pump building 2 Support buildings 2 Support buildings 14 Cylindrical storage tanks 8 30-foot-diameter 4 15-foot-diameter 2 10-foot-diameter

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Area	Functional Description	Equipment
	(3) Blending and Treating	1 Unit with 1 Blending building 9 Blending tanks 2 Support buildings 1 Cylindrical storage tank, 20 feet in diameter 1 Support building 14 Cylindrical storage tanks 4 30-foot-diameter 10 20-foot-diameter
	(4) Probable Dewaxing	1 Unit with 4 Treating/settling tanks 8 Processing buildings 20 Cylindrical storage tanks 6 20-foot-diameter 12 15-foot-diameter 2 10-foot-diameter 2 Horizontal storage tanks, 20 feet long
C	Coke Production	1 Bank of 9 shell stills 1 Fractionating column 4 Support buildings
D	Crude Oil Purification	1 Unit with 6 Processing/settling tanks 3 Oil reservoirs 1 Small pipe furnace 1 Loading rack 10 Support buildings 3 Cylindrical storage tanks 1 30-foot-diameter 2 10-foot-diameter
E	Storage	4 Support buildings 8 Cylindrical storage tanks 4 80-foot-diameter 4 40-foot-diameter
F	Thermal Cracking	1 Unit with 4 Columns (including fractionator, reactor and flash tower) 4 Light-ends recovery columns 2 Small probable processing columns 2 Pipe furnaces 5 Banks of heat exchangers/cooling coils/accumulators 1 Pump building 1 Compressor building 1 Processing building 5 Cylindrical storage tanks 3 30-foot-diameter 2 20-foot-diameter 1 Support building

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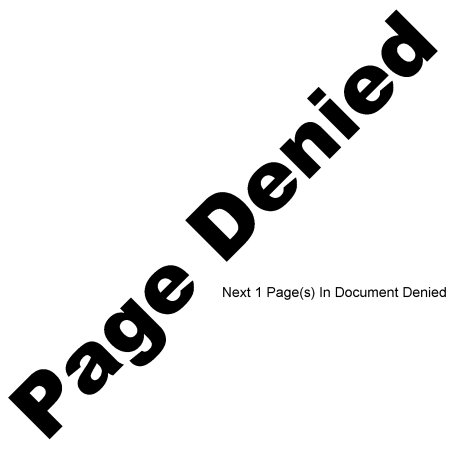
Area	Functional Description	Equipment
G	U/I Construction	4 Buildings 1 Very large building u/c 1 Semiburied storage tank, 35 feet in diameter
H	Crude Oil Primary Distillation	1 Bank of 16 shell stills 2 Fractionating columns 1 Pipe furnace 8 Processing buildings 1 Support building 4 Cylindrical storage tanks 2 50-foot-diameter 2 40-foot-diameter 2 Gasholders, 45 feet in diameter
I	Storage and U/I Secondary Processing	1 Cluster of processing equipment 4 Processing columns 2 Processing buildings 1 Cooling tower 42 Support buildings
J	Coke Production	1 Delayed coking unit with 2 Coking drums 3 Fractionation columns 1 Possible light-ends recovery column 3 Banks of processing equipment 1 Bank of heat exchangers/cooling coils/accumulators 1 A-frame furnace 7 Processing buildings 1 Pump building 4 Cooling towers 1 Overhead crane 7 Cylindrical storage tanks, 10 feet in diameter
K	Probable Treating and Blending	1 Unit with 9 Cylindrical probable blending/treating tanks 9 Horizontal probable blending/treating tanks 1 Probable blending/treating building 4 Support buildings 8 Cylindrical storage tanks 2 25-foot-diameter 5 20-foot-diameter 1 15-foot-diameter 1 Semiburied storage tank, 25 feet in diameter

Area	Functional Description	Equipment
L	Crude Oil Primary Distillation	1 Unit with 4 Fractionating columns (including 1 atmospheric and 1 vacuum column) 1 Bank of heat exchangers/cooling coils/accumulators 1 Pipe furnace 1 DeFlorez furnace 1 Pump building 1 Building with 2 probable blending/treating tanks on the roof 2 Cooling towers 5 Support buildings
M	Crude Oil Primary Distillation U/C	1 Unit with 5 Fractionating columns (including 1 atmospheric and 1 vacuum column) 1 Cluster of processing equipment 1 Large pipe furnace 1 Pump building 1 Probable treating building with 7 treating/desalting tanks 1 Building with 2 probable blending/treating tanks on the roof 1 Support building 9 Cylindrical storage tanks 6 20-foot-diameter 3 5-foot-diameter
N	Crude Oil and Products Storage	1 Loading rack 24 Support buildings 4 Semiburied reservoirs, 120 by 110 feet 67 Cylindrical storage tanks 3 127-foot-diameter 6 80-foot-diameter 4 60-foot-diameter 2 55-foot-diameter 7 50-foot-diameter 14 40-foot-diameter 4 35-foot-diameter 21 30-foot-diameter 6 20-foot-diameter 1 Semiburied storage tank, 60 feet in diameter



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Map

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2. CIA. CRS/IR File No. 0074894, ChiCom Petroleum Industries, Report No. 1248631, September 1959 (CONFIDENTIAL)

3. CIA. CRS/IR File No. 0074894, China: Petrol, Oils and Lubricants, Report No. 2116/65, December 1965 (SECRET)

Requirement

COMIREX NO2

Support Number 421862

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